



DRAFT

Kootenai Development Corporation

Flyway Property

Final Completion of Work Report

December 2004

Prepared by:

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A Subsidiary of W. R. Grace & Co.
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Explain
what the status
of a process is

locked, blocked,
usable etc?

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Section 1

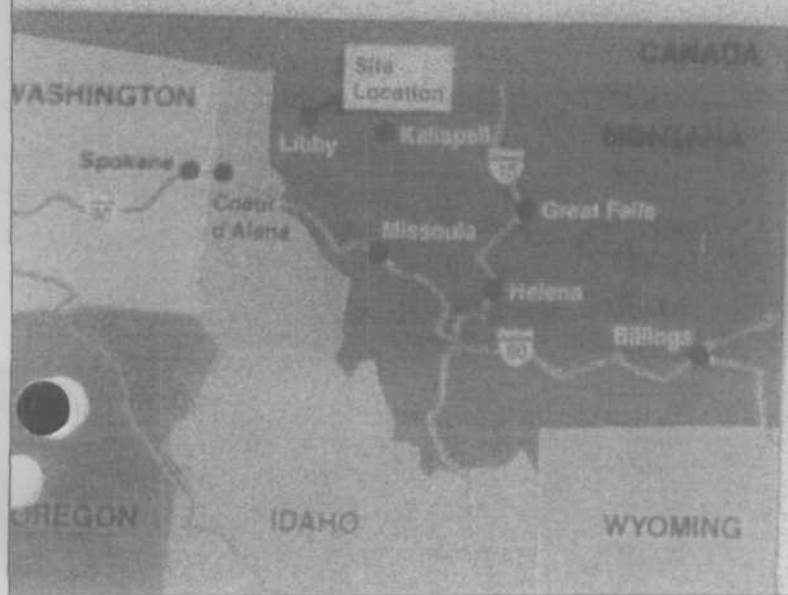
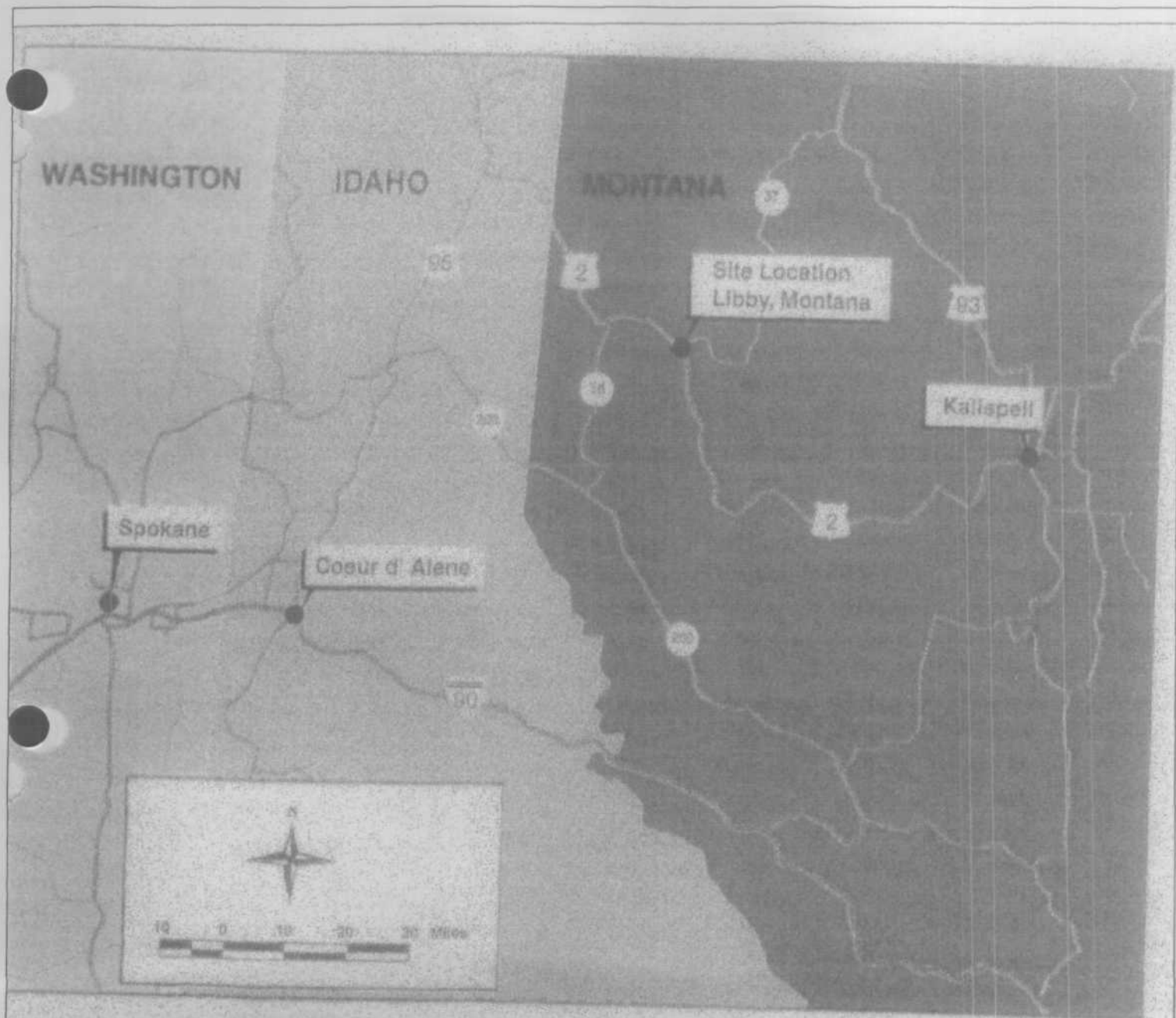
Introduction

The Final Completion of Work Report addresses the work efforts undertaken to complete the "Removal Action" for the Kootenai Development Company (KDC) Flyway site, which is part of the "Libby Asbestos Site" located in Libby, Montana. Work efforts implemented at the Flyway site were conducted in accordance with the approved "Removal Action Work Plan," dated June 2004 (draft revision 2). Remedium Group, Inc. (Remedium), a subsidiary of W. R. Grace & Co., provided environmental assistance to W. R. Grace & Co. as required to comply with the Administrative Order on Consent for Removal Action (dated July 25, 2004). Remedium also provided direct project management. Remedium completed the effort with the assistance of Mike Chapman Enterprises (excavation and equipment contractor), Koch Environmental Health, Inc. (KEH), and EMSL Analytical, Inc. (EMSL). Remedium worked under the direction of the United States Environmental Protection Agency (USEPA) and their subcontractors to successfully complete the "Removal Action" at the Flyway site. All aspects and requirements of the Removal Action Work Plan were followed during remediation.

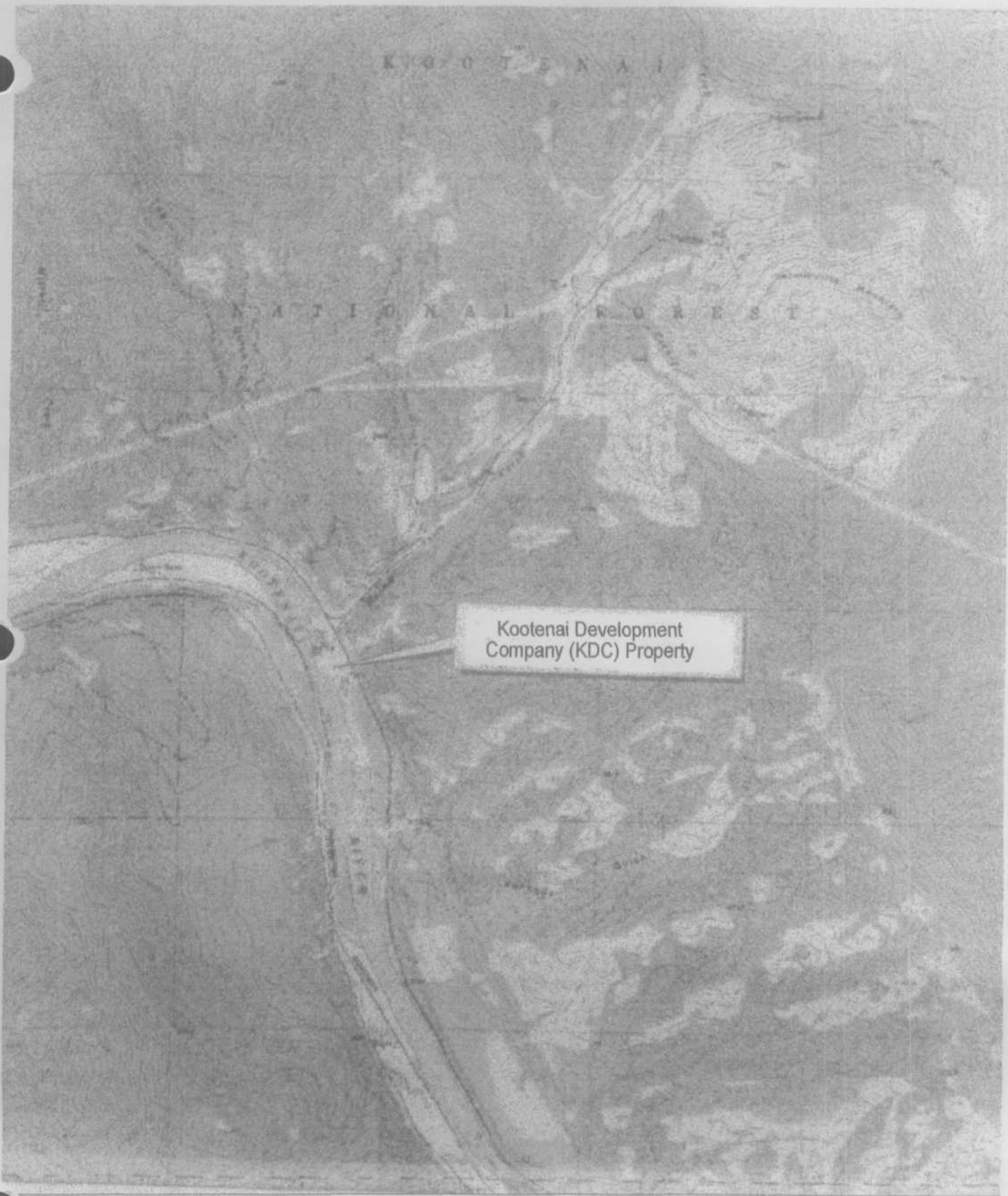
1.1 Site Area

With the Removal Action complete, the Flyway site is now vacant, sparsely wooded, undeveloped land that has been re-contoured and hydro seeded. An abandoned pump house is located on the property, close to the Kootenai River. See Figure 1-1 for the General Locus Plan of the Libby, Montana, area, and Figure 1-2, which shows the location of the Flyway site in relation to the former vermiculite mine on the U.S. Geology Survey (USGS) quadrangle map.

The Flyway site contains 19 acres, located on the northeastern side of the Kootenai River, approximately 6.0 miles east of Libby, Montana. Highway 37 runs along the northeast boundary of the site. The overall dimensions of the Flyway site are approximately 600 feet on



Remedium Group, Inc.
Figure 1-1
Site Locus Plan
Libby, Montana



Remedium Group, Inc.
Figure 1-2
Site Location Plan

CSM did GPS work?
Can we get clearer
printouts? I cannot
read the details

the north, 1,500 ± feet on the east along Highway 37, 1,500 feet on the west along Kootenai River, and 600± feet on the south.

The Flyway site was accessed through a gated entrance off Highway 37. Three on-site gravel roads provided access to the interior of the site. These gravel roads formerly meandered through the Flyway site. During the excavation work, all interior roads were removed.

1.2 Project Management

The Remedium and USEPA Region VIII management team for the Flyway site project consisted of the following:

Remedium

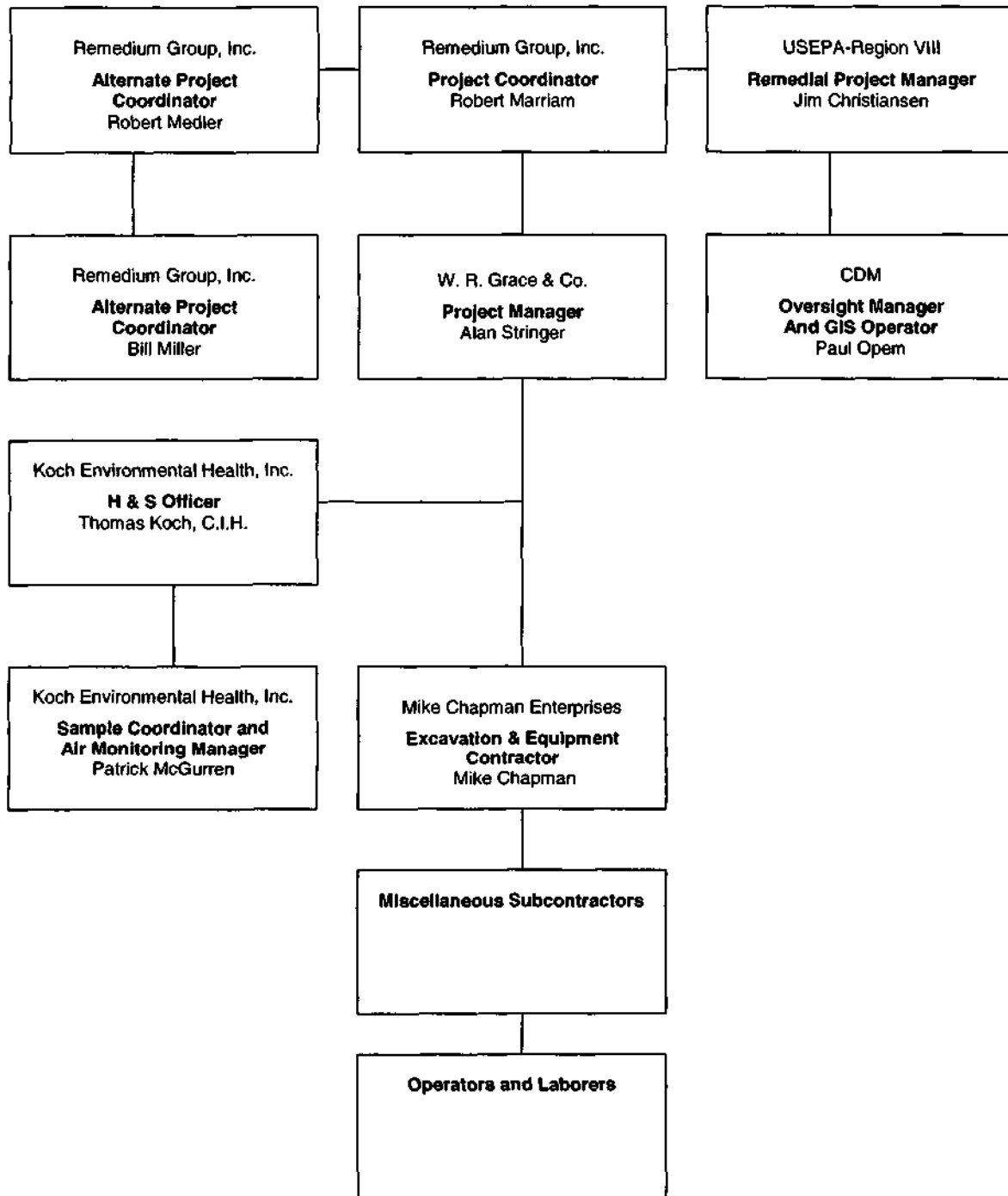
Project Coordinator	Robert R. Marriam (Remedium)
Alternate Project Coordinator	Robert J. Medler (Remedium)
Alternate Project Coordinator	Bill E. Miller (Remedium)
Project Manager	Alan R. Stringer (W. R. Grace & Co.)
Health and Safety Officer	Thomas Koch, CIH (Koch Environmental Health, Inc.)
Sample Coordinator and Air Monitoring Manager	Patrick McGurren (Koch Environmental Health, Inc.)
Excavation and Equipment Contractor	Mike Chapman (Mike Chapman Enterprises, Inc.)

USEPA – Region VIII

Remedial Project Manager	Jim Christiansen
Oversight Manager and GIS Operator	Paul Opem

See Figure 1-3 for the project management organization chart. Contact information for each of the project management personnel has been included and follows Figure 1-3.

FIGURE 1 - 3
PROJECT MANAGEMENT ORGANIZATION CHART



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Fax: 1-406-293-8901
Cell:
Email: opempi@cdm.com

- Oversight Manager and
GIS Operator

1.3 Objectives

The primary objectives of the completed removal work efforts were to:

- Insure that all phases of the project were conducted to protect human health and the environment.
- Provide ambient air monitoring around the excavation activities to determine quality of the ambient air.
- Provide personal air monitoring during soil excavation activities to provide adequate protection to workers employed on the project.
- Conduct final confirmation soil sampling to ensure that the quality of the final soil conditions in each grid area met cleanup standards.
- Backfill and re-contour site to the approximate pre-excavation conditions.
- Work under direction of the USEPA – Region VIII team members and their subcontractors to assure that the removal action work efforts were completed to their satisfaction and to address any project issues that developed during the "Removal Action" work effort.

Section 2

Excavation Work Efforts

USEPA's early characterization (2001) of the Kootenai Development Company (KDC) identified the Flyway property as a regionally significant source for asbestos contaminated vermiculite within the Libby area. The site was prioritized for cleanup as part of EPA's emergency response in 2001. Initiation of the removal activities commenced before full characterization of the site had been completed. The entire 19 acres of the Flyway site had been subdivided with 100 x 100 grids (some 85 whole or partial grids were included) for sampling and identification purposes. EPA removal activities on the site began in September 2001, starting at the south end of the property working north toward the former screening plant. Because of the late start in 2001, USEPA was able to remediate only 16 grids (covering 3.37 acres) on the southern portion of the property. No additional sampling of the site was conducted but site walkovers were made in 2002 to identify grids where visible vermiculite could be seen on the surface.

Characterization of the site was completed by EPA and the results, both surface and at depth, were included on the attached CDM Figure A2-2. This included grids with visible ^{rephrased} vermiculite only. Remedium (W. R. Grace & Co.) did not perform any additional sampling for delineation purposes. Figure A2-2 became the basis for the planned 2003 removal action by USEPA. No removal or restoration activity was conducted on the site by USEPA in either 2002 or 2003.

Following the signing of the *Administration Order on Consent for Removal Action* for the Flyway site by USEPA and W. R. Grace & Co., work plans were developed by Remedium for W. R. Grace & Co. and submitted to USEPA Region 8 for approval. Final approval of the Kootenai Development Company Flyway Site – Removal Action Work Plan was received on June 30, 2004. Grace agreed to fund and remediate the remainder of the Flyway site.

Libby, Montana

Figure A2-2

KDC Flyway Property
2003 Pre-Removal Soil
Results and Sampling Grids

Asbestos Levels
In Soil (by PLM)

Surface Samples

- No Data
- ND
- <1%
- 1%
- 2%
- 3%
- 4%
- ≥5%

Depth Samples

- No Data
- ND
- <1%
- 1%
- 2%
- 3%
- 4%
- ≥5%



Approximate Flyway
Property Boundary

100 FT Grid Tile

Grids Requiring Removal (Analytical)

Grids Requiring Removal (Visible)

Grids Under Water (Seasonal) / River Bottom



CDM

200 0 200 Feet



The EPA Remedial Action Work Plan Addendum 1 (May 10, 2002) and Addendum 2 (July 18, 2003) designated that 53 grids (each 100' x 100') be remediated on this property. However, 5 of these grids lay on U.S. Highway 37 right-of-way and were not part of the Grace property. W. R. Grace & Co. is in Chapter 11 bankruptcy proceedings and is not permitted to remediate non-owned property. As a result, it was jointly agreed that USEPA would remediate the 5 grids along Highway 37 right-of-way and Grace would remediate the remaining 48 impacted grids. During the late stages of remediation, two additional contaminated grids (J5 and J6) were observed during the excavation of grid I-5. Although these two grids were not in the original scope of work, excavation continued until all impacted soil was removed. As a result, 50 grids were remediated.

The requirements for excavation were clearly defined in the approved work plan. The Remedium/Grace starting point was the northwest corner (adjacent to the Parker property) and the excavation/remediation work proceeded in a southerly and easterly direction until all impacted grids were excavated to the appropriate depth as specified in the EPA approved site work plan.

The final depth of grid excavation was dictated by laboratory confirmation soil sample results. Soil was removed from the contaminated grids with a track excavator and loaded directly into dump trucks. The trucks were then tarped and decontaminated prior to leaving the site. The trucks traveled approximately 6 miles up Rainy Creek Road to the former mine site where the material was dumped into an EPA approved disposal area. Each truck load was accompanied by a sequentially numbered uniform hazardous waste manifest signed by the generator and the truck driver. The trucks were again decontaminated prior to re-entering the site after dumping at the mine disposal site. Copies of the manifests are provided in Appendix 3.

As soil was excavated and loaded, a laborer was nearby with a fire hose equipped with a spray nozzle to control dust during dry weather conditions. All personnel in the site work zone, trucks, and mine disposal areas were dressed in Level C at all times and wore, at a minimum, full-face respirators.

1) Clarify where
"on the Lacey Creek
Rd" EPA's approved
disposal area was
located.
2) Clarify @ which
point in time was the

decontaminated?
was it really
before "re-erecting the
Site" rather than
@ the dump location?
or both?

Each 100' x 100' grid requiring action was completed as follows. Initially, the entire grid was excavated to a depth of approximately 9 inches. Occasionally, based on field observations, excavation went directly to 18" below grade. Five ^① composite soil samples were taken from each grid and submitted to the local EMSL analytical laboratory in Libby. If the sample results were non-detect for asbestos, the grid was considered clean and no further excavation was performed. If, however, the initial sample results indicated detectable asbestos, the excavation ^{② (even at trace levels)} continued in 9-inch intervals with additional confirmation sampling after each subsequent excavation. A result of less than 1% was required to stop excavating at 18 inches or below. This procedure continued until a depth of 4 feet (the maximum depth) was reached. At 4 feet, excavation ceased. See Section 3 for additional sampling categories and procedures.

All designated grids were excavated in the manner described above. Field work started on July 12, 2004, and excavation was completed on October 29, 2004. An estimated 28,520 cu. yds. (2,852 truck loads) of soil were removed from the Flyway property and disposed at the mine disposal area.

Backfilling commenced on November 1, 2004. An on-site stockpile of "clean" soil estimated at 10,500 cu. yds. was supplemented with 17,640 cu. yds. (1,764 truck loads) of backfill obtained from the Plum Creek soil/gravel pit in Libby. EPA tested the ^③ Plum Creek material and determined it to be "clean" prior to use as backfill on the Flyway site. An estimated 28,140 cu. yds. of backfill material was used to grade and re-contour the site.

After the site was backfilled and graded, the riverbank slope was stabilized by placing silt fence and straw bales at the top of the slope. Additionally, rock that was collected from the site was placed along the river's edge. The rock (riprap) extended 4 feet below high water mark and 2 feet above. The extent of riprap placement was approved by EPA.

The site was hydro seeded November 22-24. A 6-foot high chain link permanent fence will be installed in the spring of 2005 or earlier if weather permits.

Three major issues developed during the project:

-
- 1) by means as confirmation sampling
 - 2) inset phase as indicated
 - 3) was the onsite stock pile of clon

soil tested?

- (a) Dust control on the mine haul road.
- (b) Dust control in the excavated areas of the Flyway site.
- (c) Additional contamination not originally noted was found (Grids J-5 & J-6).

All issues were satisfactorily addressed and are detailed in Section 6. A site map showing the areas of excavation and clearance depth is attached as Figure 2-1. A walk-through inspection of the completed work was conducted by the Site Manager Courtney Zamora (Volpe), Paul Opem (CDM), and Paul Lammers (CDM) on November 30, 2004. No negative comments were received. All personnel present gave favorable comments pertaining to the quality of work and the overall appearance of the finished project.

Photographic documentation of the work progress has been prepared and may be found in Appendix 5.

TARGET SHEET
EPA REGION VIII
SUPERFUND DOCUMENT MANAGEMENT SYSTEM

DOCUMENT NUMBER: 2030756

SITE NAME: LIBBY ASBESTOS

DOCUMENT DATE: 12/01/2004

DOCUMENT NOT SCANNED

Due to one of the following reasons:

- ☐ PHOTOGRAPHS
- ☐ 3-DIMENSIONAL
- ☒ OVERSIZED
- ☐ AUDIO/VISUAL
- ☐ PERMANENTLY BOUND DOCUMENTS
- ☐ POOR LEGIBILITY
- ☐ OTHER
- ☐ NOT AVAILABLE
- ☐ TYPES OF DOCUMENTS NOT TO BE SCANNED
(Data Packages, Data Validation, Sampling Data, CBI, Chain of Custody)

DOCUMENT DESCRIPTION:

FIGURE 2-1 TOPOGRAPHIC MAP PARCELS 'A' AND 'B' PER COS #2891
IN GOV'T LOT 4, SECTION 32, TOWNSHIP 31 NORTH, RANGE 30
WEST, P.M.M.

Section 3

Sampling Program Protocol

Prior to starting work on the site, certain basic ground rules were established with regard to the sampling protocol. It was agreed that the laboratory to be used would be:

EMSL Analytical, Inc.
107 West 4th Street
Libby, Montana 59923
R. K. (Ron) Mahoney, Manager

This decision had several obvious advantages including:

1. EMSL familiarization with the EPA analytical results reporting requirements
2. Local EPA approved laboratory which allowed for minimal delays and fastest delivery time for analytical results.
3. On-line reporting capability to all interested parties.
4. Use of analytical methodologies and modifications which conformed to the latest EPA requirements.

Originally, it was planned that the qualified Koch Environmental Health, Inc. personnel would perform the required personal air sampling analysis. Subsequently, it was decided that all analyses (both air and soil) would be conducted by EMSL. This assured maximum credibility for the results and maintained an ongoing consistency in the procedures used. The only contaminant of concern was asbestos.

Volpe Department of Transportation personnel (acting as interagency contractor to USEPA) provided forms to be used for reporting purposes. Volpe maintained the data base for all analyses produced at the Libby location as well as analytical results from the Flyway property. Guidance was provided to Remedium as to the format of the data package and timing for the deliverables on a daily basis.

Clarification of
COC - was it
used as or
LA?

3.1 Sampling Plan Protocol

Four (4) categories of contaminated soil were generated for the Flyway site grid classification, which are listed below:

- No asbestos detected in the soil samples and no substantial visual vermiculite present;
- No asbestos detected in the soil samples but substantial visual vermiculite is present;
- Asbestos was detected in soil samples at trace levels or less than 1% in the 0-18 inch depth interval.
- Asbestos is present in soil samples equal to or greater than 1%.

The plan of action for each 100' x 100' grid area category is listed below:

- No asbestos identified in soil samples and no substantial visual vermiculite present.

No action was conducted in these 100' x 100' grid areas. This scenario was developed in advance by USEPA and none of the impacted grids fell in this category.

- No asbestos detected in soil samples but substantial visual vermiculite is present.

Originally, three (3) inches of soil was planned to be removed (scraped) and the excavation was to be visually inspected. However, due to the surface layer containing cobbles, a minimum of 9-inches of soil was removed (scraped and the excavation was visually inspected). At this point, confirmatory soil samples were collected. If the soil sample results read non-detect for asbestos, then no further action was required.

- Asbestos was detected in the soil samples at less than 1% in between 9" and 18" depths.

If soil samples containing less than 1% asbestos were at the surface, 9 inches of soil was removed and confirmatory soil samples collected. This was repeated, if necessary, to achieve a goal of non-detect asbestos in the first 18-inch depth interval.

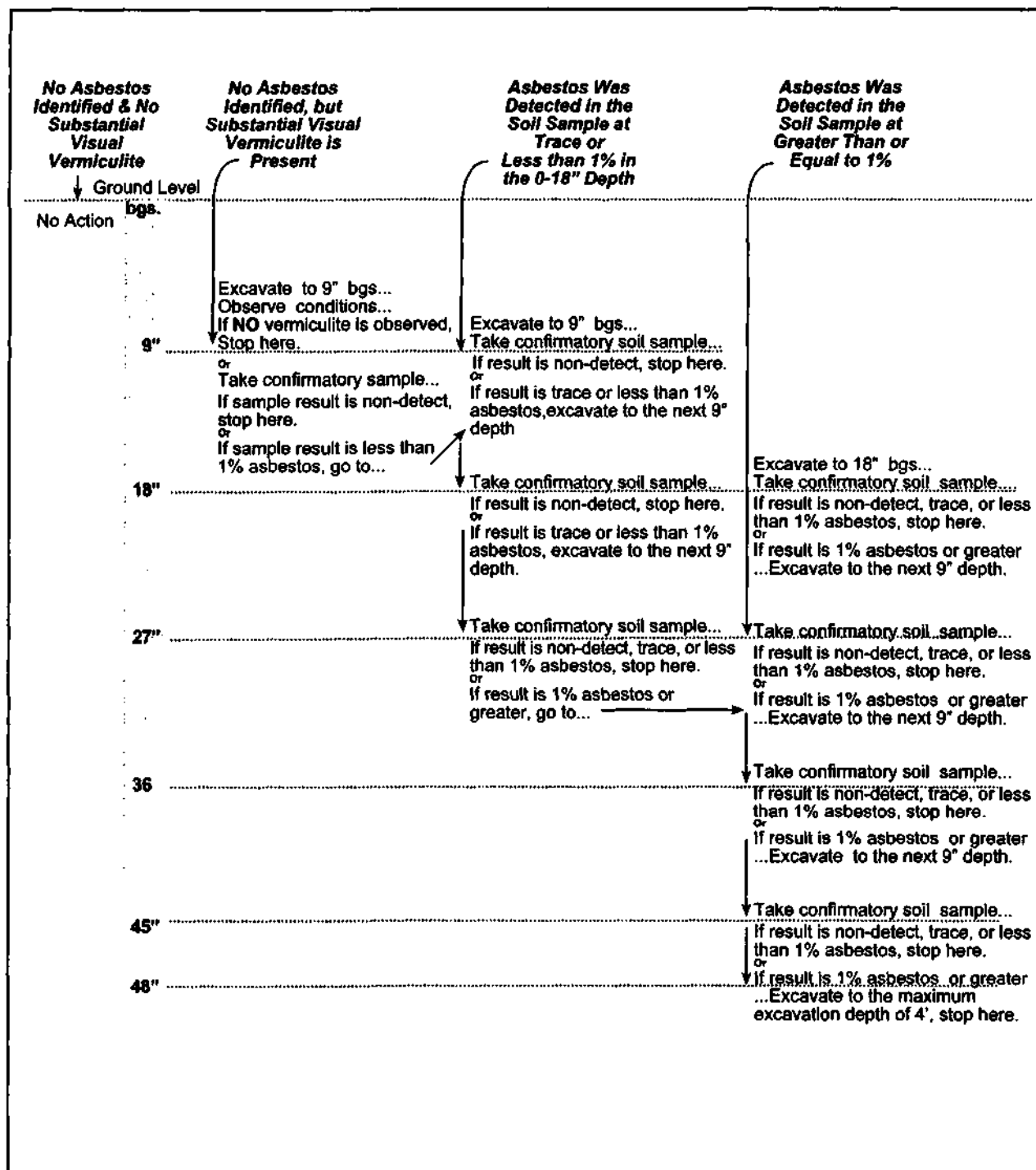
- Asbestos is present in soil samples at equal to or greater than 1%.

18-inches of soil was removed in this grid area. After the soil was excavated, confirmatory soil samples were collected. Depending on the soil sample results (1% asbestos or greater), additional soil was removed at 9-inch intervals, followed by

confirmatory soil samples. The depth of the excavation would not exceed 4 feet. The goal was to have less than 1% asbestos in the confirmatory samples between 18 inches and 4 feet below ground surface (bgs).

See Figure 3-1 for the Implemented Soil Sample Category Action Process.

Figure 3-1
Implemented Soil Sample Category - Action Process



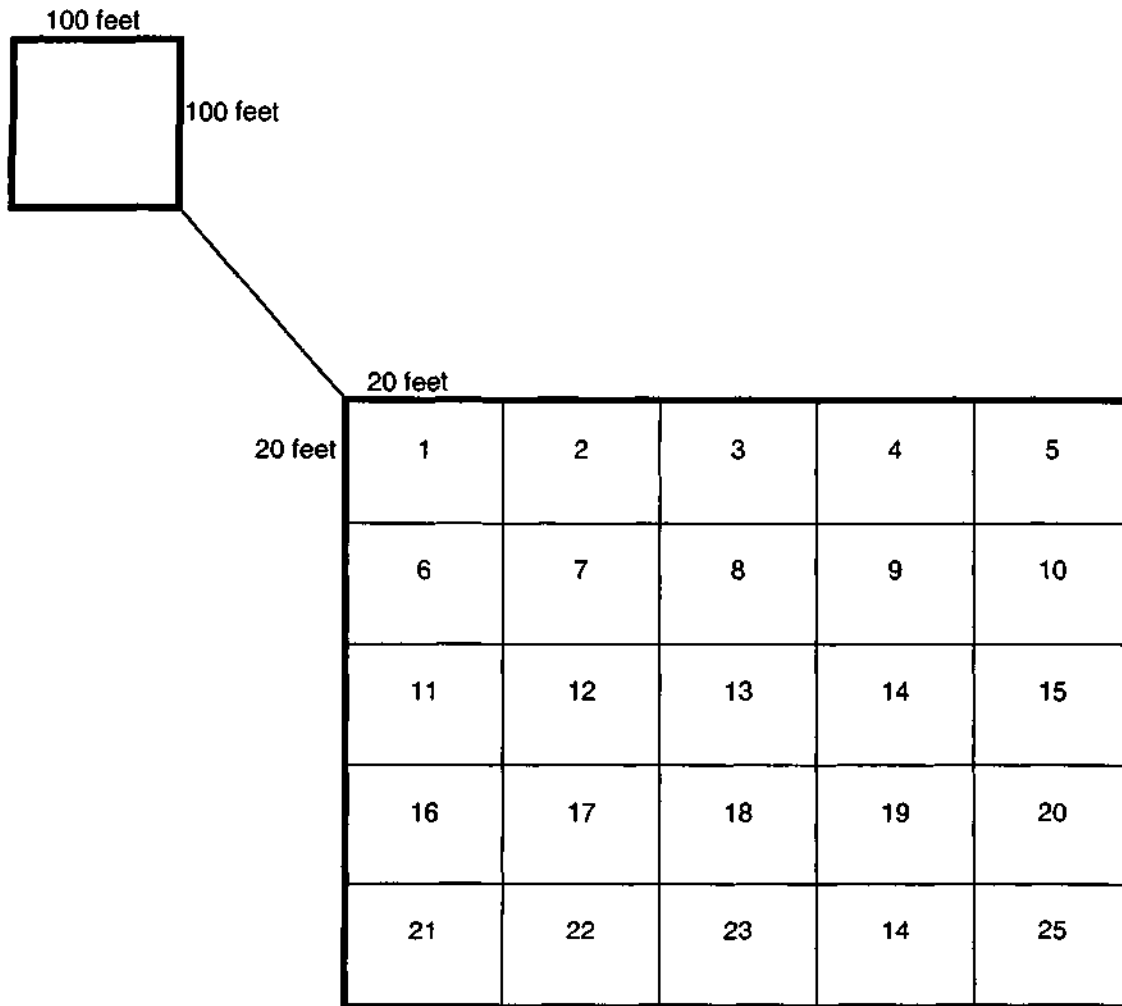
3.1.1 Field Reference Grid

A surveyor was used to mark key survey points with wooden stakes. From these points, a measuring tape was used to mark the 100' x 100' grid areas which were staked at the grid corners. In addition, each sub grid (20' x 20') was also identified using a measuring tape and marked with paint.

3.1.2 Confirmation Soil Sampling

Each 100' x 100' grid was subdivided into 20' x 20' sub grids (see Figure 3-2). A composite soil sample was collected from five (5) adjacent sub grids. Samples of surface soil were collected at the appropriate center point of each sub grid (1, 2, 3, etc.). Partial grids were sampled and composited into five (5) aliquots or lesser units for areas without five (5) adjacent sub grids. A paint mark (X) and a flag were placed at the center of each sub grid area and located using GPS equipment by Paul Opem (CDM Oversight Manager and GIS Operator).

Figure 3-2
Soil Sampling Grid
Libby, MT



Example: Typical composite soil sample will be generated by combining one center soil sample from each of five sub-grids, as shown above by the highlighted sub-grids.

3.1.3 Field Sample Data Sheets

As part of the centralized Libby data base, Remedium completed the required field sample data sheets (FSDS). Volpe and CDM had specified the requirements for these sheets based on the media being sampled. Copies of each FSDS were faxed to CDM on a daily basis. All FSDS records are included in Appendix 2.

3.1.4 Laboratory Analysis

The confirmatory grid area soil samples were analyzed by Polarized Light Microscopy (PLM) for asbestos, NIOSH Method 9002, Issue 2.

All soil samples were analyzed by the EMSL Analytical Laboratory, Inc. (EMSL) located in Libby, Montana. Soil samples were hand carried by Mr. Pat McGurren (Koch Environmental Health, Inc.) to EMSL daily, with the proper chain of custody (COC) documentation.

The resulting analytical data was forwarded to Mr. Alan Stringer (W. R. Grace & Co.), Mr. Robert Marriam (Remedium), and the CDM office in Libby. The data was electronically transmitted to Ms. Annie Antio (CDM, Cambridge), Volpe Project Team (Cambridge), and the Libby sample coordinator. The data was faxed and electronically submitted to EMSL (Westmont, NJ). In addition to the analytical data supplied to Volpe, Remedium faxed the field data sheets to the Volpe Center on a daily basis.

Remedium conformed to the USEPA's standard operating procedures (SOPs) and applicable modifications to existing analysis methods, as required.

One (1) duplicate soil sample was submitted to EMSL per every twenty (20) soil samples analyzed.

3.2 Ambient Air Monitoring

Five (5) ambient air monitoring stations were located around the "Removal Action" area. Ambient air monitoring was conducted each work day. See Figure 3-3 for approximate location of the stationary air sample location.

I realized my
confusion: we
"Removal Action
Zone" - I envisioned
this as a perimeter

around a single
grid during all
activities.

Perhaps this we
could either be

defined or
~~defined~~ renamed
as: Flyway
property?

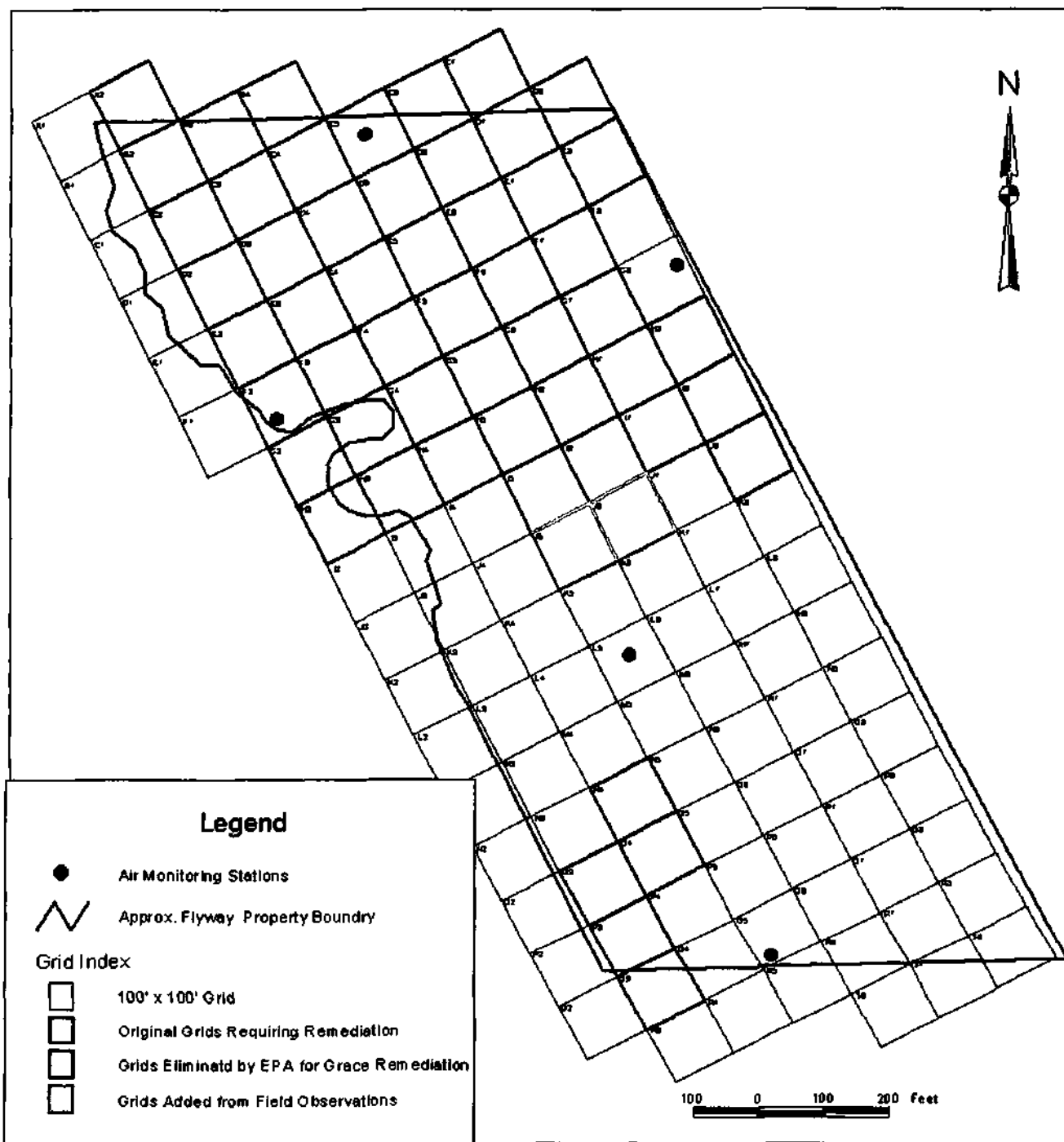


FIGURE 3-3
FLYWAY PROPERTY - LIBBY, MONTANA
APPROXIMATE LOCATION OF
AIR SAMPLING POINTS
AROUND EXCLUSION ZONE

Remedium Group, Inc.

Data Source - Plot by C&H
 Edited - Libby, Montana Figure A-2-2

Plan Prepared By:
 Hayes & Associates
 Woburn, Massachusetts
 Revised December 22, 2004

3.2.1 Laboratory Analysis

Ambient air samples were analyzed by Transmission Electron Microscopy (TEM) – EPA 40 CFR, Part 763, Final Rule (AHERA).

All of the ambient air samples (filters) were hand carried by Mr. Pat McGurren (Koch Environmental Health, Inc.) to EMSL daily, with proper chain-of-custody (COC) documentation.

A hard copy report was faxed to Mr. Alan Stringer (W. R. Grace & Co.), Mr. Robert Marriam (Remedium), CDM office in Libby, and EMSL (Westmont, NJ). EMSL electronically submitted a copy of this report to the Volpe Project Team (Cambridge) and Annie Antio (CDM, Cambridge, MA). In addition, Remedium faxed the field data sheets to the Volpe Center.

Remedium conformed to the USEPA's SOPs and modifications to existing analysis methods, as needed.

One (1) field blank was submitted to EMSL on a daily basis and a lot blank was submitted to EMSL when a new "lot" of cassettes were used. EMSL re-sampled one (1) sample every ten (10) samples at the laboratory as part of laboratory quality control and assurance.

3.3 Personal Air Monitoring

The personal air monitoring program included the air monitoring of two (2) people per day. The personal air monitoring program started by sampling the air space around two (2) designated people on a continuous daily basis. However, the sampling frequency was reduced to three (3) sampling time frames – morning, afternoon, and a 30-minute noontime exclusion sample. This change was determined by the on site health and safety manager. All personal working in the "Removal Action" zone wore a full-face respirator.

3.3.1 Laboratory Analysis

Personal air monitoring samples were analyzed by Phase Contrast Microscopy (PCM) fiber count by NIOSH 7400, 4th Addition, Issue 2, 8/15/94.

Results -
QA sam^g
dunks/appeal
dup^{s, etc} missing

Explain why
PAM program
Δd midstream

All personal air samples were hand carried by Mr. Pat McGurren (Koch Environmental Health, Inc.) to EMSL daily, with proper chain-of-custody (COC) documentation.

The data were faxed to Mr. Alan Stringer (W. R. Grace), Mr. Robert Marriam (Remedium), and the CDM office in Libby. The data were electronically submitted to Annie Antio (CDM, Cambridge), the Volpe Project Team (Cambridge), and the Libby sample coordinator. The data was faxed and electronically submitted to EMSL (Westmont, NJ). Remedium faxed the field data sheets to the Volpe Center.

Remedium conformed to USEPA's SOPs and modifications to existing analysis methods, as needed.

One (1) field blank was submitted to EMSL on a daily basis and a lot blank was submitted when a new "lot" of cassettes were used.

Discuss
Results of Field
Blanks,
lot blanks

Section 4

Sampling Results Summary

This section provides a summary of the soil sample data, ambient air monitoring data, and personal air monitoring data.

All of the laboratory analytical data was electronically transferred to the Volpe Center, Cambridge, MA by EMSL Analytical, Inc. In addition, all of the laboratory sample data supplied to Remedium are included in this report in Appendix 1.

4.1 Soil Sampling

All of the grids which were excavated on the Grace property met the cleanup category criteria discussed in Section 3.1.

Table 4-1 shows the implemented action per grid location. Some of the 100' x 100' grids included on this table show more than 1 clearance level. Each 100' x 100' grid was subdivided into 5 rows of 20' x 20' sub-grids. Samples taken from the row containing 5 of these sub-grids were composited and a single analysis performed. Since there were 5 composite samples taken from each 100' x 100' grid, the clearance depth varies on certain grids.

Table 4-1

**Implemented Action per Grid Area
Flyway Site
Libby, MT**

Grid #	9" Excavation	18" Excavation – Non-Detect	18" Excavation - <1%	48" Excavation
A2	X			
B2	X	X	X	
B3	X	X	X	
B4	X			
C2	X			
C3	X	X		
C4	X			
C5	X			
C6	X	X		
C7	X			
D2	X			
D3	X			
D4	X	X		
D5		X		X
D6		X	X	
D7			X	
E2	X			
E3	X		X	
E4		X	X	
E5		X	X	X
E6		X	X	
E7			X	
F2	X	X		
F3		X	X	
F4		X	X	
F5				X
F6		X	X	
F7	X	X	X	
G2				X
G3				X
G4		X	X	
G5		X	X	
G6			X	
G7	X		X	
H2				X
H3				X
H4	X		X	
H5		X	X	
H6			X	
H7			X	
I5		X	X	X
I6		X	X	
I7			X	
J5				X
J6		X	X	X
N4	X			
O3	X			
O4	X			
P3	X			
Q3	X			

headers for SB
9" Excavation - ND
~~18" Excavation~~

The work plan called for confirmatory sampling of all grids following excavation. The final goal was to excavate to the point where the resultant soil sample analyses assured that a clearance level for the individual grid had been met. This was accomplished in all cases.

4.2 Ambient Air Monitoring

Ambient air monitoring was collected from five (5) fixed locations which comprised the perimeter of the site. A total of 417 ambient air samples was collected over a 4-month work period. During this period, only one (1) ambient air sample result was analyzed with two fibers. Remedium discussed the sample results daily with Sean Olivera (CDM, Health & Safety officer), in addition to communicating with the USEPA oversight manager on a daily basis.

Of the 417 air samples collected and analyzed, 96% (401 total) contained no asbestos fibers and only 16 or 4% contained any fibers, with 15 of the 16 containing only 1 fiber. The analyzed samples containing one or more fibers were tabulated as to date, sample number, and sample location. See Table 4-2 for details.

Table 4-2
Perimeter Air Sampling Summary
Fiber Occurrence
Flyway Site – Libby, Montana

<u>Sample Date</u>	<u>Sample No.</u>	<u>Sample Location</u>	<u>Sample Results (Fibers)</u>
7/27	189	South	1
7/27	190	East	1
7/28	207	West	1
8/05	305	South	1
8/06	323	North	2*
8/11	375	North	1
8/16	435	South	1
8/16	437	Mid-site	1
8/31	602	East	1
9/02	635	Mid-site	1
9/23	887	East	1
10/1	994	Mid-site	1
10/5	1026	Mid-site	1
10/8	1073	Mid-site	1
10/25	1270	West	1
10/29	1345	East	<u>1</u>
Total			<u>16</u>

Sample Location Summary	4 East
	3 South
	2 West
	2 North
	<u>5 Mid-site</u>
Total	<u>16</u>

*Action level of 2 fibers – See Section 6, Project Issues and Resolutions (Issue #2) for action taken.

①
Indicate
totals of
samples taken
@ each level.

4.3 Personal Air Monitoring

Before any work occurred on the Flyway site, it was agreed that those workers on the project would be equipped with full-face respirators. On a daily basis, two of the workers were selected for personal air sampling. Originally, it was intended that the air filters and pumps would run for the full day. Later, it was decided to break the day into three periods, morning, noon (for the 30-minute excursion sample) and afternoon. This program continued during the entire excavation period. There were 542 samples collected. Although several of these air samples exceeded the OSHA permissible exposure level (PEL) for asbestos (0.1 fiber/cc), the workers were fully protected by the full-face respirators. Air breathed was magnitudes lower than the PEL.

What's the
rational
behind this
decision

Section 5 Quality Assurance and Quality Control Modifications

One modification and clarification was made concerning the sampling assignment and analytical methods used by EMSL laboratory. This modification and clarification was made in conjunction with Mr. R. K. (Ron) Mahoney, EMSL Analytical, Inc., Libby, MT and Mr. R. R. Marriam (Remedium), dated 8/27/04. The description of the modification as written is provided below.

All air and soil samples would be collected by Koch Environmental Health, Inc. (KEH) personnel. No analyses would be performed by KEH. All samples (air and soil) would be analyzed by EMSL Analytical, Inc. in the Libby, MT laboratory. The analyses would be as follows:

- **Perimeter air samples to be analyzed using 40 CFR, Part 763 Subpart e (Transmission Electron Microscopy – TEM (AHERA), as modified by EPA for use at the Libby location;**
- **Personal air monitoring filters to be analyzed using NIOSH Method 7400;**
- **Soil samples to be analyzed using NIOSH method 9002. Soil samples to be homogenized and an aliquot to be analyzed. This is the same method used by EPA at the Libby location; and**
- **Overloaded air filters (either perimeter air samples or personal air samples) to undergo indirect preparation prior to analysis.**

See Appendix 4 for a copy of this Record of Modification.

Section 6

Project Issues and Resolutions

There were three 3 major issues that arose during the work. The issues, coupled with their resolutions, are discussed below.

Issue 1. Dust control on the mine haul road

Excavation of the Flyway site began on July 12, 2004. On July 14, a noticeable dust cloud was observed on the haul road resulting from dump trucks traveling the road while transporting the waste material from the Flyway to the disposal area.

Resolution – Initially, additional water trucks were mobilized to the haul road to keep the road adequately wet to control dust generated by the truck traffic. On July 24, the road was oiled. The oil suppressed the dust adequately throughout the remaining work period.

Issue 2. Dust control in the excavated areas of the Flyway site

As mentioned previously, excavation activity began July 12. On August 6, 2 fibers were detected on the stationary air sample (Sample #FL 00323) taken on the work perimeter monitoring location. The 2-fiber hit required action to be taken.

Resolution – Straw bales were purchased and straw was spread over the excavated areas to act as a mulch. The straw was wetted periodically. As new grids were excavated, straw was applied to the excavation bottoms and kept wet. No additional 2-fiber hits were recorded at the five stationary air monitoring locations during the remainder of the project.

Issue 3. Additional contamination not originally noted was found (Grids J-5 and J-6).

Grids J-5 and J-6 were initially determined to be clean under the original grid classification system as found in EPA Remedial Action Work Plan, Addendum 2 – July 18, 2003. However, when the excavation was being completed in grid I-5 sub-grid 25 to a depth of 4 feet, vermiculite was observed approximately 2 feet bgs and extending into grid J-5. The suspect material was sampled and tested 5% tremolite.

Resolution – The visible vein of contaminated soil was followed into J-5 (sub grids 4-5, 10, and 15). All soil was removed to a depth of 4 feet. Clean native soil was apparent on the western and southern borders of the excavation. Also Grid J-6 (sub grids 1, 6, 11) was excavated to a depth of 4 feet and the eastern side of the excavation was clean native soil below 18 inches. Sub grids 2, 3, 7, 5, 11, and 13 in J-6 tested <1% at 18". All contaminated soil was removed. See Figure 6-1 for the location of grids J-5 and J-6.

Classifying the diff.
between work
parameters
ambient and
monitoring. Not
described in previous

sections (work
period). If the
"ambient" results
presented in Sect 4
is really work
periods then
we need to see these

data.
If the "ambient"
data are work
periods, Table 4-2
must be improved
to indicate what
S, N, E, W means
in relation to change.

activities & the
side itself

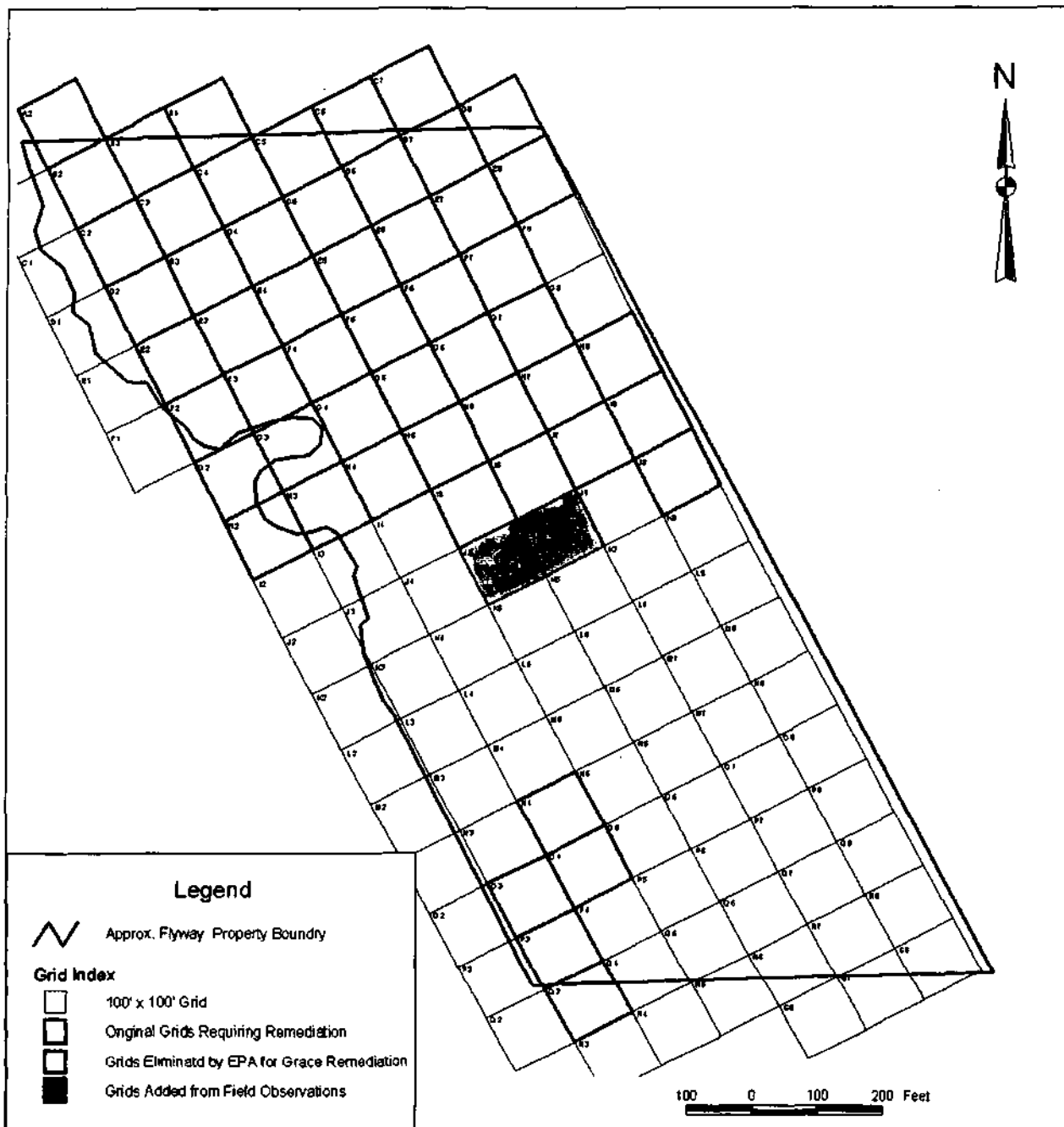


Figure 6-1 Grid Areas
Flyway Property
Libby, Montana

Remedium Group, Inc.

Data Source - Plan by CDM
 Entitled "Libby, Montana Figure A-2-2"

Plan Prepared By:
Hayes & Associates
 Woburn, Massachusetts
 Revised December 14, 2004

Section 7

Health and Safety

One of the primary objectives of the removal work effort was to insure that all phases of the project was conducted to protect human health and the environment.

- All workers provided appropriate health and safety training certificates prior to work.
- All workers had recent medical monitoring, including x-rays.
- All workers were fit-tested with respirators prior to implementing any field work.
- All workers were equipped, at a minimum, with Level C personal protective equipment including full-face respirators.
- Daily health and safety tailgate meetings were held by the excavation and equipment contractor prior to starting each day's work.

Other project safety items included:

- No reportable worker accidents or lost time accidents.
- No traffic accidents or citations occurred during the "Removal Action" work efforts.

Section 8

Project Schedule

The Removal Action Work Plan for the Flyway site was approved by USEPA on June 30, 2004.

The implemented work schedule consisted of the six (6) tasks listed below:

- Site Kickoff Meeting
- Soil Excavation and Disposal
- Backfilling and Contouring
- Hydro Seeding
- Regulatory Field Inspection
- Final Report

The time frame in which each task was implemented is located on Figure 8-1. The total time frame to complete the Removal Action at the Flyway site was five (5) months – July 2004 through November 2004. No delays were experienced during the excavation and backfilling operations.

2004

[illegible]

Section 9

Project Cost

The Administrative Order on Consent for Removal Action specified that W. R. Grace & Co. would fund remediation of the property known as the Libby Flyway site. The work was completed according to terms of the above Order at a cost of \$1,514,845. This amount excludes Grace project management cost and EPA oversight costs. Details of the individual cost items comprising the total are shown in Table 9-1.

Table 9-1

Actual Project Cost Summary
Flyway Site
Libby, MT – 2004

Work Plan Preparation		\$ 4,317
Mobilization		32,772
Construction Expense		
1. Excavation & Disposal (28,510 cu. yds.)		
Equipment Rental	\$454,104	
Fuel	43,545	
Labor	283,772	
Misc. Supplies	32,427	
Contractor Markup @ 25%	<u>203,462</u>	
Subtotal		\$1,017,310
2. Backfilling		
Purchase of 17,640 cu. yds. of backfill	\$ 35,439	
Spreading 10,500 cu. yds. onsite material	N/A ¹	
Equipment Rental	120,345	
Fuel	5,222	
Labor	51,752	
Misc. Supplies	9,085	
Contractor Markup @ 25%	<u>55,461</u>	
Subtotal		\$277,304
3. Miscellaneous		
Hydro Seeding	\$ 14,800	
Health & Safety Supplies	11,671	
Sample Collection & Data Processing Cost	86,291	
Analytical Laboratory Cost	50,066	
Temporary Fence Rental	3,592	
Medical Monitoring – Work Force	5,940	
GPS Equipment	386	
Clearing for Permanent Fence	5,700 ²	
Final Completion Report Cost	<u>4,696³</u>	
Subtotal		\$ 183,142
Grand Total		<u>\$1,514,845⁴</u>

¹Cost is spread to equipment rental and labor in backfilling costs.

²Permanent fence at a cost of approximately \$20,000 will be installed as weather permits.

³Cost for first draft only.

⁴Excludes Grace Project Management cost and EPA oversight cost.

Section 10

Quantities and Types of Materials Removed Offsite or Handled Onsite

During the course of the remediation work at the Flyway site, soil contaminated with asbestos was excavated then transported by truck to an EPA-approved disposal site located at the former vermiculite mine site some 6 miles distant.

2,852 dump truck loads of contaminated soil, each containing 10 cu. yds. (est.), were removed from the site and disposed. Each load was manifested and the manifest records are included in Appendix 3. Excavation and disposal activities commenced July 12, 2004, and continued through November 19, 2004. The excavated area of the site comprised fifty (50) full or partial 100' x 100' grids totaling approximately 11.5 acres.

After excavation was completed on 10/29/04, backfilling of the site began November 1 and continued through 11/19. A total of 28,140 cu. yds. of clean backfill material was placed on the site in the excavated areas. The backfill used was derived from two sources:

1. 10,500 cu. yds. (est.) were stored onsite.
2. 17,640 cu. yds. was purchased from Plum Creek.

The material previously stored onsite was loaded into dump trucks and placed near the excavated areas of the site.

Additional backfill was purchased from Plum Creek in Libby. This material was loaded into dump trucks, transported to the Flyway site, and dumped near the excavated grids. The backfill was spread by a dozer and contoured. The site was restored to its approximate original condition.

See Table 10-1 and Table 10-2 for quantities of excavated and disposed contaminated soil and replacement backfill, respectively.

Table 10-1
Excavation and Disposal

<u>Dates</u>	<u>No. of Truckloads</u>	<u>Cu. Yds. per Load</u>	<u>Total Cu. Yds.</u>
Jul 12-Oct 29	2,852	10	28,520

Table 10-2
Backfill

<u>Dates</u>	<u>Source of Material</u>	<u>No. of Truckloads</u>	<u>Cu. Yds. Per Load</u>	<u>Total Cu. Yds.</u>
Nov 1-Nov 6	Onsite	1,050	10	10,500
Nov 8-Nov 19	Plum Creek	1,764	10	17,640
			Total	28,140

Section 11

Conclusions

Remedium completed the "Removal Action" at the Flyway site under direction of USEPA Region VIII and its contractors.

The grid areas where the "Removal Action" was implemented were completed in accordance with the appropriate cleanup category and criteria.

After the "Removal Action" was completed, the grid areas were backfilled with clean fill, landscaped, contoured, and hydro seeded.

Final inspection of the Flyway site was conducted by a representative of Remedium, Volpe, and CDM on November 30, 2004. No additional work efforts were proposed.

**Section 12
Certification**

Kootenai Development Corporation

Final Work Completion Report

Flyway Site

Libby, MT

CERTIFICATION

Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Robert J. Medler
Director Remedium Group, Inc.

Date 12/27/04

TARGET SHEET
EPA REGION VIII
SUPERFUND DOCUMENT MANAGEMENT SYSTEM

DOCUMENT NUMBER: 2030756

SITE NAME: LIBBY ASBESTOS

DOCUMENT DATE: 12/01/2004

DOCUMENT NOT SCANNED

Due to one of the following reasons:

- ☐ PHOTOGRAPHS
- ☐ 3-DIMENSIONAL
- ☐ OVERSIZED
- ☒ AUDIO/VISUAL
- ☐ PERMANENTLY BOUND DOCUMENTS
- ☐ POOR LEGIBILITY
- ☐ OTHER
- ☐ NOT AVAILABLE
- ☐ TYPES OF DOCUMENTS NOT TO BE SCANNED
(Data Packages, Data Validation, Sampling Data, CBI, Chain of Custody)

DOCUMENT DESCRIPTION:

CD - APPENDIX 1 LABORATORY ANALYTICAL DATA - 2004

CD - APPENDIX 2 FIELD SAMPLE DATA SHEETS - 2004

CD - APPENDIX 3 WASTE MANIFESTS - 2004

TABBED PAGE

APPENDIX 4

Remedium

R. R. Marriam, Consultant
Remedium Group, Inc.
A Subsidiary of W. R. Grace & Co.

6401 Poplar Ave., Suite 301
Memphis, TN 38119-4840

Tel: (901) 820-2023
Fax: (901) 820-2061

E Mail

August 27, 2004

Mr. Jim Christiansen
Remedial Project Manager
US EPA Region 8
999 18th Street – Suite 300
Denver, CO 80206 -2466

Re: Flyway Work Plan Modifications

Dear Jim:

Working in conjunction with Mr. R. K. (Ron) Mahoney, EMSL Analytical, Inc., Libby, MT, certain modifications and clarifications have been made to the sampling assignments and methods specified in the Flyway Removal Action Work Plan. These changes are shown on the attached Record of Modification Form.

It is believed that the modifications are clearly spelled out on the form and the reason for the modifications is reasonable. Since these are the procedures followed since the project started, this Record of Modification (after proper approval) will memorialize the approved changes.

Yours very truly,



R. R. Marriam

jm
Attach.

h:\shared\jmillert\word\christiansen82704.doc

Record of Modification
to the
Kootenai Development Company
Flyway Site – Libby, Montana
Removal Action Work Plan
June 2004 (Revision 2)

Project: Flyway Site – Libby, Montana

Other Document (Title, Number/Revision): Removal Action Work Plan – June 2004

Requester: R. R. Marriam
Company: Remedium Group, Inc.

Title: Consultant
Date: 8/26/04

Description of Modification: All air and soil samples will be collected by Koch Environmental Health, Inc. (KEH) personnel. No analyses will be performed by KEH. All samples (air and soil) will be analyzed by EMSL Analytical, Inc. in the Libby, MT laboratory. The analyses will be as follows:

- Perimeter air samples will be analyzed using 40 CFR, Part 763 Subpart e (Transmission Electron Microscopy – TEM AHERA), as modified by EPA for use at the Libby location.
- Personal air monitoring filters will be analyzed using NIOSH Method 7400.
- Soil samples will be analyzed using NIOSH Method 9002. Soil samples will be homogenized and an aliquot will be analyzed. This is the same method used by EPA at the Libby location.
- Overloaded air filters (either perimeter air samples or personal air samples) will undergo indirect preparation prior to analysis.

Reason for modification: This modification is to clarify sample collection activity and sample analysis procedures used throughout this work plan.

Duration of Modification (circle one):

Temporary Date(s): _____
Resident address(es): _____

- If appropriate, attach a list of all applicable Index Identification numbers.

Permanent

(complete Proposed Modification Section) Effective Date: 7/9/04

Technical Review and Approval:
(Grace)

R. R. Marriam

Date:

08/27/04

Review and Approval:
(Grace)

R. G. Mott

Date:

8/27/04

Distribution: Original recipients of the work plan plus Anni Autio (aiutoah@cdm.com), Mark Raney (raney@volpe.dot.gov) and Mary Goldade (goldade.mary@epamail.epa.gov).

TABBED PAGE

APPENDIX 5

Flyway Site Photographs

Mobilization – Excavation

Color Photo(s)

The following pages
contain color that does
not appear in the
scanned images.

To view the actual images, please
contact the Superfund Records
Center at (303) 312-6473.



Flyway Site - Office and Decon Trailers



Flyway Site - Start of Excavation



Flyway Site - Typical Excavation



Flyway Site - Excavation and Water Hose Application



Flyway Site - Excavation Activity



Flyway Site - Continued Excavation



Flyway Site - Deeper Excavation



Flyway Site - River Bank Excavation



Flyway Site - Excavated Area with Straw Applied



Flyway Site - Large Excavated Area Covered with Straw



Flyway Site - Boulders Collected from Site and used for Riprap



Flyway Site - Excavated Area Ready for Backfill

Sampling



Flyway Site - Measuring and Marking Sub-Grids



Flyway Site - Collecting Soil Sample



Flyway Site - Decontaminating Sampling Equipment between Samples

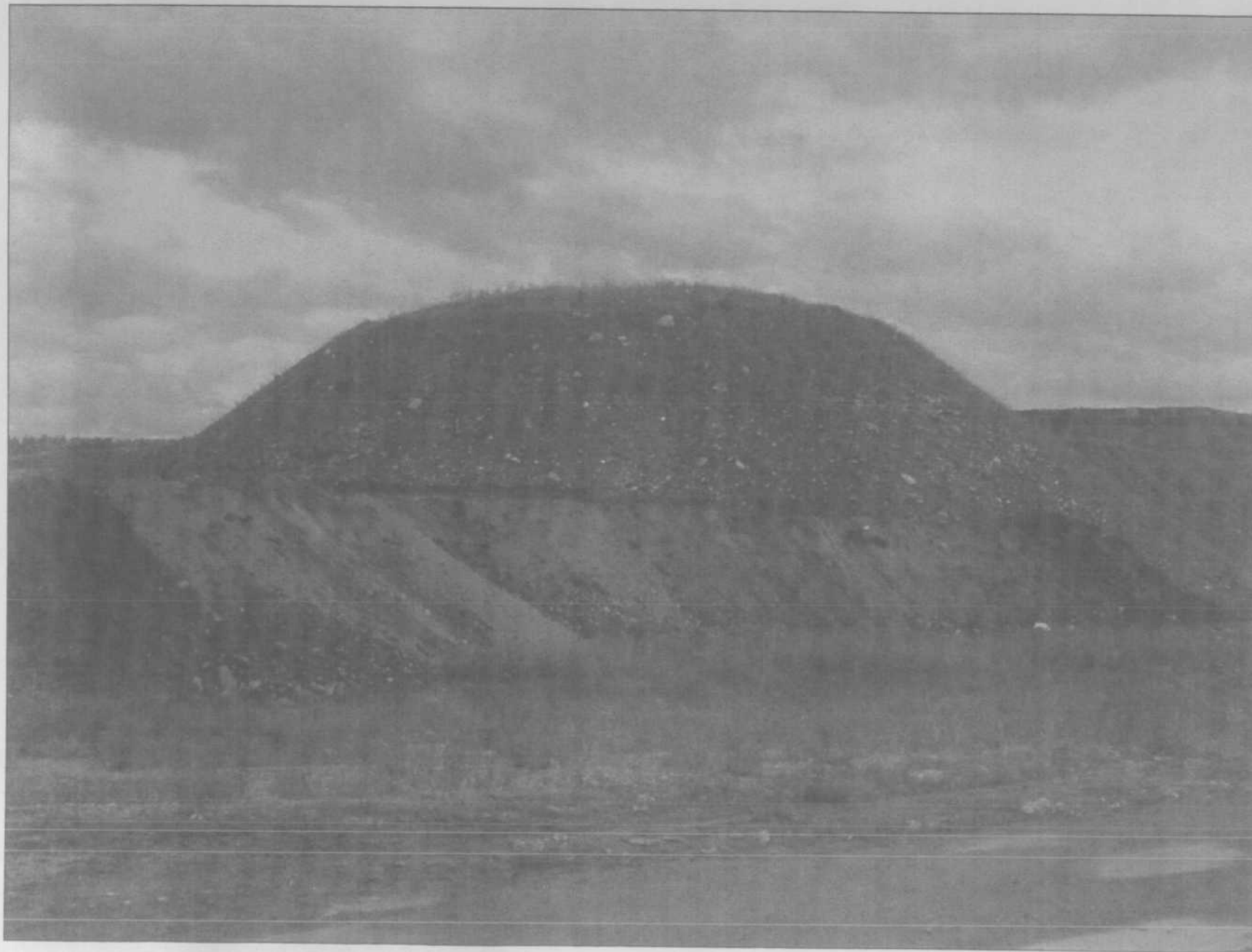


Flyway Site - Verifying Soil Sample Number with Sample Location (Grid # - Sub-Grid #)

Disposal



Flyway Site - Dumpsite at the Former Mine



Flyway Site - Leveled Dumpsite at Former Mine



Backfilling



Flyway Site - Loading On-Site Clean Backfill



Flyway Site - Dumping Backfill



Flyway Site - Backfill Dumped and Ready for Spreading



Flyway Site - Showing Depth of Backfill



Flyway Site - Final Grading of Backfill

Project Completion



Flyway Site - Excavated, Backfilled and Graded - Ready for Hydroseeding



Flyway Site - Excavated, Backfilled and Graded - Ready for Hydroseeding